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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,586	07/15/2003	Fabrice Balavoine	240037US0XDIV	6883
22850	7590	08/04/2006	EXAMINER	
C. IRVIN MCCLELLAND OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			CEPERLEY, MARY	
			ART UNIT	PAPER NUMBER
			1641	

DATE MAILED: 08/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/618,586	Applicant(s) BALAVOINE ET AL.	
	Examiner Mary (Molly) E. Ceperley	Art Unit 1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-33 is/are pending in the application.
- 4a) Of the above claim(s) 23-26, 28-30, 32 and 33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-22, 27 and 31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/673,668.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/15/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

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1) Reference AU of the Information Disclosure Statement filed July 15, 2003 is not present in the file of the parent application and has not been considered by the examiner.

2) Applicant's election with traverse of the invention included by claim 14 wherein H-E-L is defined by the structure of formula (5) of claim 31 in the reply filed on June 12, 2006 is acknowledged.

The traversal is on the ground(s) that:

a) The reagent H-E-L "must be viewed as a single entity and not broken up into its component parts".

The examiner concurs with this statement which is consistent with the restriction requirement of January 09, 2006 wherein the reagent H-E-L was not broken up into its constituent parts. However, each combination of variables which defines a specific reagent H-E-L is considered to be chemically and functionally distinct from the others as further discussed in the fifth subparagraph of paragraph **2)** of the January 09, 2006 Office action. A complete search of all inventions encompassed by the reagent H-E-L would be burdensome as set forth in the fifth subparagraph of paragraph **2)** of the January 09, 2006 restriction requirement.

b) The Markush group defining H-E-L has "a community of chemical or physical characteristics".

This is not true for the reasons set forth in paragraph **a)** above {see also the fifth subparagraph of paragraph **2)** of the January 09, 2006 Office action}.

c) The members of the Markush group defined by H-E-L "need only possess at least one property in common which is mainly responsible for their function in the claimed relationship", this "common characteristic" being "their use in attachment or self-organization of biological macromolecules with nanotubes of carbon".

This argument is considered to be spurious for the reason that the methods of "attachment" of the reagent H-E-L to the biomolecules and nanotubes are very different based on the specific type of H-E-L reagent used. For example, the biotin-containing reagent of claim

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30 would attach a biomolecule to itself by affinity to an avidin-derivatized biomolecule while the reagent of claim 29 would attach a biomolecule by reaction through the terminal amine to form a covalent bond. The reagent of claim 32 would attach a biomolecule to itself by ionic bonding.

Claims 23-26, 28-30, 32 and 33 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim.

The requirement is still deemed proper and is therefore made FINAL.

The claims of this application which read on the elected invention have been searched to the extent that the search included a search of the compound of formula (5) of claim 31.

3) Although specific claims may be discussed in the rejections below, these rejections are also applicable to all other claims in which the noted problems/language occur.

4) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5) Claims 14-22, 27 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a) Claim 14 is indefinite in not specifying where the "attachment ... of biological macromolecules" occurs on the H-E-L/nanotube structure. The structure of the final product produced by the method cannot be determined. It is unclear what constitutes "suitable" temperature and pH conditions to prepare an undefined product.

b) In claim 14, line five, it is unclear what is meant by the term "functionalized" since the reagent H-E-L is not required to contain any conventional, chemically reactive functional group.

c) In claim 14, it is unclear what is meant by the term "a positively charged hydrophilic group" and a "negatively charged hydrophilic group". The structures meant to be included by these terms cannot be determined.

d) In claim 14, it is unclear what is meant by the term "or otherwise" as it is used throughout the claim. See also, the confusing and indefinite term "which may have or otherwise in the middle of the chain phosphate groups".

e) In claim 14, for the definition of H, it is unclear what is meant by the term "functionalized with alkyl groups for bonding to E". "Alkyl" groups are not "functional" groups since the term "functional" conventionally implies chemically reactive groups such as amines or carboxylic acids.

f) In claim 14, for the definition of A, the word "or" should appear after "hydrogen atom". It is unclear what is meant by the term "type" as used in the definition of A.

g) The reagent of claim 31 does not appear to be a subset of the reagents recited in claim 14. Presumably, for the structure of formula (5), the left-hand moiety containing carboxylic acids is meant to correspond to H of the reagent H-E-L. However, H in claim 14 is defined as "an organometallic complex" while H of claim 31 does not contain a metal moiety. Further, the right-hand multi-ring moiety of formula (5) is not included by the definition of A in claim 14 which provides only for each A defined as "an aromatic ring" attached to Ar₂; the structure Ar₂ of claim 14 does not provide for any rings fused to the core structure.

h) Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the steps which would constitute the "analysis".

i) In claim 21, it is unclear what is meant by the term "bioconductor". It is unclear what physical process constitutes "conduction" and what moiety is being "conducted".

j) In claim 22, it is unclear if the phrase "which may be physically adsorbed" is intended strictly as an intended method of use {not a limitation on the composition per se} or whether the reagent is required to be present on the nanotubes.

6) Claim 19 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim 19 provides for the use of "bionanomaterial", but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

7) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary (Molly) E. Ceperley whose telephone number is (571) 272-0813. The examiner can normally be reached from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long V. Le, can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 20, 2006



Mary (Molly) E. Ceperley
Primary Examiner
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